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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,142	01/20/2004	David A. Waldman	3174.1016-001	8777
21005 7590 05/29/2007 HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133			EXAMINER BIBBINS, LATANYA	
			ART UNIT 2627	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/761,142

Applicant(s)

WALDMAN ET AL.

Examiner

LaTanya Bibbins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 and 38-85 is/are pending in the application.
- 4a) Of the above claim(s) 1-36, 38-48, 64 and 68-85 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 49-63 and 65-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. In the remarks filed on March 26, 2007, Applicant amended claims 1, 2, 4, 6, 12-15, 18-21, 27-31, 36, 38-40, 47-49, 56, 57, 68, 71, and 72, cancelled claim 37, and added claims 77-85.

Election/Restrictions

2. Applicant's election with traverse of the invention of Group II and the species corresponding to Figure 1A, claims 49-63 and 65-67, in the reply filed on March 26, 2007 is acknowledged. The traversal is on the grounds that the method defined by Group I cannot be practiced by an apparatus that is materially different from the one defined by Group II.

This is not found persuasive because, as stated in the previous Office Action, the process as claimed can be practiced by an apparatus for recording and/or reading holographically stored information where a motive device rotates the aspherical reflecting surface or additional reflecting surface about a first axis and, *dependently*, a second axis, perpendicular to the first axis.

In addition, Applicant argues that the method cannot function in a "dependent" manner, however, the method claims do not recite "independent" as is clearly recited in the apparatus claims. Further, note that the apparatus can perform a method different from the claimed method, for example, not a method where the object/reference beam angle is preserved (see claim 1).

The requirement is still deemed proper and is therefore made FINAL.

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3. Claims 1-36, 38-48, 64, and 68-85 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected process and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction/election requirement in the reply filed on March 26, 2007.

Specification

4. The abstract of the disclosure is objected to because of its undue length. Applicant is reminded of the proper format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet **within the range of 50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 49, 56, 57, 61, 62, and 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 49 recites the limitation "the other." There is insufficient antecedent basis for this limitation in the claim.

Claim 56 recites the limitations "the first focus of the ellipsoidal reflecting surface" and "the second focus of the ellipsoidal reflecting surface." There is insufficient antecedent basis for these limitations in the claim.

Regarding claim 57, the term "*about 45°*" is a relative term which renders the claim indefinite. The term "*about*" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claim 61, the terms "*about 90°*" and "*about 360°*" are relative terms which render the claim indefinite. The term "*about*" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claim 62, the terms "*about 180°*" and "*about 360°*" are relative terms which render the claim indefinite. The term "*about*" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 67 recites the limitations "the planar mirror" and "the two foci of the ellipsoidal reflecting surface." There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 49-63 and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dewald (US Patent Number 5,566,387) in view of Dalziel (US PGPub Number 2003/0053232 A1).**

Regarding claim 49, Dewald discloses an apparatus for recording holographically stored information comprising: at least one portion of an aspherical reflecting surface having two focal points (see the elliptical mirror of Figure 2 element 76 and the discussion in column 6 lines 14-18); at least one additional reflecting surface (see the rotating mirror of Figure 2 element 70); a motive device for rotating at least one of either at least one portion of the aspherical reflecting surface or the at least one additional reflecting surface about a first axis (see Figure 2 element 72 and the discussion in column 6 lines 1-5 and column 7 line 62- column 8 line 12) means for directing an object beam and a reference beam that are mutually coherent along their respective optical paths (see optical elements 48, 56, 60, 62, 64, 70, and 76 of Figure 2 and the discussion in column 5 lines 43-column 6 line 21), wherein either an object beam or a reference beam is reflected from at least one portion of the aspherical reflecting surface to intersect and form an interference pattern with the other at a

storage location in a recording media at or near one of the two focal points (column 6 lines 14-31).

Dewald fails to disclose that the motive device rotates at least one of either at least one portion of the aspherical reflecting surface or the at least one additional reflecting surface independently about a second axis, perpendicular to the first axis. Dalziel, however, discloses an actuator-controlled mirror with a motive device that rotates at least one of either at least one portion of the aspherical reflecting surface or the at least one additional reflecting surface about a first axis and, independently, a second axis, perpendicular to the first axis (paragraphs [0015], [0018], and [0019]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the actuator controlled mirror described by Dalziel into the holographic storage apparatus of Dewald. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to produce an apparatus that changes the reflected direction of a beam in a controlled and accurate manner (Dalziel paragraphs [0018] and [0019]).

Regarding claim 50, Dewald and Dalziel disclose the apparatus of claim 49 wherein at least one portion of the aspherical reflecting surface is a portion of an ellipsoidal reflecting surface (see Dewald Figure 2 element 76 and column 6 lines 10-13).

Regarding claim 51, Dewald and Dalziel teach the apparatus of claim 50 wherein at least one additional reflecting surface can be independently rotated about

the first and the second axes (see Dalziel paragraph [0018], specifically the two coils with two independent currents for controlling rotations around the two axes).

Regarding claim 52, Dewald and Dalziel teach the apparatus of claim 51 wherein the motive device for rotating the additional reflecting surface is a two-dimensional galvanometer (see Dalziel paragraphs [0016]-[0018] and the discussion of the two axis galvanometer mirror).

Regarding claim 53, Dewald and Dalziel disclose the apparatus of claim 51 wherein the motive device for rotating the additional reflecting surface is a MEMS device (see Dalziel paragraph [0016]).

Regarding claim 54, Dewald and Dalziel teach the apparatus of claim 51 wherein the motive device for rotating the additional reflecting surface includes two independently controlled one-dimensional galvanometers (see Dalziel paragraph [0018] and the discussion of the one axis galvanometer mirror).

Regarding claim 55, Dewald and Dalziel teach the apparatus of claim 51 wherein the motive device for rotating the additional reflecting surface is a one-dimensional galvanometer mounted on a rotary motive device (see Dalziel paragraph [0015] and paragraph [0018] where Dalziel discusses a one axis galvanometer mirror).

Regarding claim 56, Dewald and Dalziel disclose the apparatus of claim 51 wherein the first focus of the ellipsoidal reflecting surface is located on at least one additional reflecting surface; and the second focus of the ellipsoidal reflecting surface is located at or near a surface of or within the recording media (see Dewald column 6 lines 14-21).

Regarding claim 57, Dewald and Dalziel disclose the apparatus of claim 56 wherein either the object beam or the reference beam is directed to the ellipsoidal reflecting surface by reflecting either the object beam or the reflecting beam from the additional reflecting surface (Dewald column 6 lines 6-13), and wherein said additional reflecting surface can be rotated about at least one axis to effect redirection of one of said object or reference beams through an azimuthal arc of at least 45° on said ellipsoidal reflecting surface (see Dewald column 6 lines 6-21).

Although Dewald does not explicitly recite an azimuthal arc of at least 45°, Dewald discusses reflection at a *plurality of angles* and the reference beam for *all angles* of reflection, which clearly suggests to one of ordinary skill in the art that the azimuthal arc includes at least 45°. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made include an azimuthal arch of at least 45° in order to accurately redirect the reference beam toward the storage location.

Regarding claim 58, Dewald and Dalziel disclose the apparatus of claim 57 wherein said additional reflecting surface can be rotated about at least one axis to effect redirection of one of said object or reference beams through an azimuthal arc of at least 90° on said ellipsoidal reflecting surface (see Dewald column 6 lines 6-21).

Although Dewald does not explicitly recite an azimuthal arc of at least 90°, Dewald discusses reflection at a *plurality of angles* and the reference beam for *all angles* of reflection, which clearly suggests to one of ordinary skill in the art that the azimuthal arc includes at least 90°. Therefore, it would have been obvious to one of ordinary skill

in the art at the time the invention was made include an azimuthal arch of at least 90° in order to accurately redirect the reference beam toward the storage location.

Regarding claim 59, Dewald and Dalziel disclose the apparatus of claim 57 wherein said additional reflecting surface can be rotated about at least one axis to effect redirection of one of said object or reference beams through an azimuthal arc of at least 90° and less than or equal to 180° on said ellipsoidal reflecting surface (see Dewald column 6 lines 6-21).

Although Dewald does not explicitly recite an azimuthal arc of at least 90° and less than or equal to 180°, Dewald discusses reflection at a *plurality of angles* and the reference beam for *all angles* of reflection, which clearly suggests to one of ordinary skill in the art that the azimuthal arc includes at least 90° and less than or equal to 180°. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made include an azimuthal arch of at least 90° and less than or equal to 180° in order to accurately redirect the reference beam toward the storage location.

Regarding claim 60, Dewald and Dalziel disclose the apparatus of claim 57 wherein said additional reflecting surface can be rotated about at least one axis to effect redirection of one of said object or reference beams through an azimuthal arc of at least 90° and less than or equal to 270° on said ellipsoidal reflecting surface (see Dewald column 6 lines 6-21).

Although Dewald does not explicitly recite an azimuthal arc of at least 90° and less than or equal to 270°, Dewald discusses reflection at a *plurality of angles* and the reference beam for *all angles* of reflection, which clearly suggests to one of ordinary skill

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in the art that the azimuthal arc includes at least 90° and less than or equal to 270° .

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made include an azimuthal arc of at least 90° and less than or equal to 270° in order to accurately redirect the reference beam toward the storage location.

Regarding claim 61, Dewald and Dalziel disclose the apparatus of claim 57 wherein said additional reflecting surface can be rotated about at least one axis to effect redirection of one of said object or reference beams through an azimuthal arc of at least 90° and less than or equal to 360° on said ellipsoidal reflecting surface (see Dewald column 6 lines 6-21).

Although Dewald does not explicitly recite an azimuthal arc of at least 90° and less than or equal to 360° , Dewald discusses reflection at *a plurality of angles* and the reference beam for *all angles* of reflection, which clearly suggests to one of ordinary skill in the art that the azimuthal arc includes at least 90° and less than or equal to 360° . Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made include an azimuthal arc of at least 90° and less than or equal to 360° in order to accurately redirect the reference beam toward the storage location.

Regarding claim 62, Dewald and Dalziel disclose the apparatus of claim 57 wherein said additional reflecting surface can be rotated about at least one axis to effect redirection of one of said object or reference beams through an azimuthal arc of at least 180° and less than or equal to 360° on said ellipsoidal reflecting surface (see Dewald column 6 lines 6-21).

Although Dewald does not explicitly recite an azimuthal arc of at least 180° and less than or equal to 360° , Dewald discusses reflection at a *plurality of angles* and the reference beam for *all angles* of reflection, which clearly suggests to one of ordinary skill in the art that the azimuthal arc includes at least 180° and less than or equal to 360° . Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made include an azimuthal arch of at least 180° and less than or equal to 360° in order to accurately redirect the reference beam toward the storage location.

Regarding claim 63, Dewald and Dalziel disclose the apparatus of claim 57 wherein the additional reflecting surface is a planar mirror (see Dewald Figure 2 element 70).

Regarding claim 65, Dewald and Dalziel disclose the apparatus of claim 57 wherein the additional reflecting surface is an aspherical surface (see Dewald Figure 2 element 70).

Regarding claim 66, Dewald and Dalziel disclose the apparatus of claim 57 wherein said additional reflecting surface and the recording media are disposed on the same side of any plane that is (a) parallel to a surface of the recording media and (b) intersects the ellipsoidal reflecting surface (see Dewald Figure 2).

Regarding claim 67, Dewald and Dalziel disclose the apparatus of claim 66 wherein a portion of the reference beam impinging on the planar mirror is coaxial with an axis formed by the two foci of the ellipsoidal reflecting surface (see Dewald Figure 2).

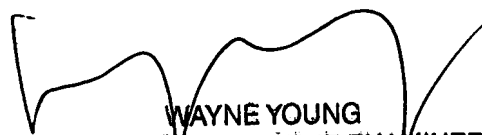
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


LaTanya Bibbins


WAYNE YOUNG
SUPERVISORY PATENT EXAMINER